

The EEG Activity during Binocular Depth Perception of 2D Images

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Abstract

© 2018 Marsel Fazlyyyakhmatov et al. The central brain functions underlying a stereoscopic vision were a subject of numerous studies investigating the cortical activity during binocular perception of depth. However, the stereo vision is less explored as a function promoting the cognitive processes of the brain. In this work, we investigated a cortical activity during the cognitive task consisting of binocular viewing of a false image which is observed when the eyes are refocused out of the random-dot stereogram plane (3D phenomenon). The power of cortical activity before and after the onset of the false image perception was assessed using the skull EEG recording. We found that during stereo perception of the false image the power of alpha-band activity decreased in the left parietal area and bilaterally in frontal areas of the cortex, while activity in beta-1, beta-2, and delta frequency bands remained to be unchanged. We assume that this suppression of alpha rhythm is presumably associated with increased attention necessary for refocusing the eyes at the plane of the false image.

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